

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all previous versions and listings of claims in this application.

Claim Listing:

Claims 1-28: (Canceled).

29. (New) A device for the management of electrical sockets connected to a branch of an AC electrical network, the device comprising:

a monitor circuit arranged to detect a presence or absence of a load connected to one of the sockets; and

a voltage level management circuit connected to said branch of the AC electrical network, the voltage management circuit comprising:

a processing unit that processes information provided by said monitor; and

an intervention unit coupled to said branch of the AC electrical network and controlled by said processing unit, said intervention unit comprising means for varying an AC voltage level in response to the load.

30. (New) The device of claim 29, wherein said monitor circuit comprises:

a current sensor that produces a first signal representing a current circulating in said branch of the AC electrical network; and

means for recognizing the presence or absence of the load.

31. (New) The device of claim 30, wherein said current sensor comprises at least one amperometric transformer.

32. (New) The device of claim 30, wherein said monitor circuit comprises:

a first module that converts and filters said first signal; and

a second module that recognizes the presence/absence of the load connected to said one of the sockets,

said first module being connected at an input thereof to said current sensor and supplying, at a first output, a second signal representing a current circulating in said branch of the AC electrical network,

said second module being connected at an input thereof to said first module and supplying, at a second output, a third signal representing the presence/absence of the load applied to said one of the sockets.

33. (New) The device of claim 32, wherein said second module comprises means for analyzing an intensity level of said second signal.

34. (New) The device of claim 33, wherein said means for analyzing supplies said third signal responsive to detecting a current level that is either higher or lower than a pre-set value.

35. (New) The device of claim 29, wherein an input of said processing unit is operatively coupled to an output of said monitor circuit, and said processing unit supplies, to said intervention unit, a first control signal corresponding to a transition from a load to a no load condition, and a second control signal corresponding to another transition from the no load condition to the load condition.

36. (New) The device of claim 29, wherein said intervention unit comprises:

a first device that connects/disconnects a first part to/from a second part of said branch of the AC electrical network, said first part being connected to a portion of the branch, and said second part being connected to said one of the sockets;

a voltage transformer having a primary winding connected to said first part and a secondary winding connected to said second part; and

a second device that connects/disconnects said secondary winding to/from said second part.

37. (New) The device of claim 36, wherein, responsive to a first control signal from the processing unit, the first device disconnects said first part from said second part and the second device connects said secondary winding to said second part.

38. (New) The device of claim 36, wherein, responsive to a second control signal from the processing unit, the first device connects said first part to said second part and the second device disconnects said secondary winding from said second part.

39. (New) The device of claim 29, wherein said monitor comprises an overload recognition circuit.

40. (New) The device of claim 39, wherein said overload recognition circuit comprises a third module operatively arranged to recognize a state of overload, said third module being connected at an input thereof to said first module and supplying, at a third output, a signal representing the state of overload.

41. (New) The device of claim 40, wherein said third module analyzes a frequency of a second signal representing a current circulating in said branch of the AC electrical network.

42. (New) The device of claim 41, wherein said third module supplies said signal representing the state of overload when a detected frequency is higher than a first pre-defined threshold level for a pre-defined time interval.

43. (New) The device of claim 40, wherein an input of said processing unit is connected to said third module and supplies, to said intervention unit, a third control signal corresponding to an onset of a state of overload, and a fourth control signal when said state of overload ceases.

44. (New) The device of claim 36, wherein, responsive to a control signal from said processing unit, the first device disconnects said first part from said second part, and said second device connects a secondary winding to said second part.

45. (New) The device of claim 43, wherein, responsive to said fourth control signal, a first connection/disconnection device connects a first part of said AC electrical branch to a second part of said AC electrical branch, and a second device disconnects a secondary winding of a voltage transformer in the intervention unit from said second part.

46. (New) The device of claim 29, wherein said monitor circuit comprises means for recognizing a short circuit condition.

47. (New) The device of claim 32, wherein said monitor circuit comprise a fourth module configured to recognize a short circuit condition, said fourth module being connected at an input thereof to said first module and supplying, at a fourth output, a signal representing a short circuit condition.

48. (New) The device of claim 47, wherein said fourth module comprises means for analyzing a frequency of said second signal.

49. (New) The device of claim 48, wherein said means for analyzing generates a signal representing a short circuit condition in response to detection of a frequency greater than a second pre-defined threshold level.

50. (New) The device of claim 47, wherein an input of said processing unit is coupled to said fourth module, said fourth module supplying a fifth control signal to the intervention unit in response to a detection of an onset of a short circuit condition.

51. (New) The device of claim 50, wherein the first device disconnects said first part from said second part, and the second device disconnects a secondary winding of a voltage transformer in the intervention unit from said second part in response to the fifth control signal.

52. (New) The device of claim 29, wherein said monitor circuit comprises means for recognition of a ground fault.

53. (New) The device of claim 29, further comprising means for signaling the presence or absence of at least one of a load, an overload condition, and a short circuit condition.

54. (New) The device of claim 29, further comprising means for detecting contact of a person with said one of the sockets or other powered portion of the branch of the AC electrical network.

55. (New) The device of claim 29, further comprising means for maintaining, on a socket with no load applied, a safety voltage having a sinusoidal waveform and a frequency of about 10 kHz.

56. (New) A domestic type electrical socket, comprising the device for the management of electrical sockets connected to a branch of an AC electrical network of claim 29, and means for signaling at least one of a presence or absence of a load, an overload condition, and a short circuit condition.

57. (New) The socket of claim 56, further comprising at least one of a warning light and an acoustic alarm.

58. (New) A method for managing electrical sockets connected to a branch of an AC electrical network, the method comprising:

monitoring a load condition and detecting a presence or absence of a load on said one of the sockets;

processing load condition information determined by said monitoring; and

varying an AC voltage level provided to said one of the sockets in response to the processed load condition information.